

WHAT IS CLAIMED IS:

1. A method of fabricating a steel part, the method comprising the steps of:

• preparing and casting a steel having the following composition in percentage by weight: $0.06\% \leq C \leq 0.25\%$; $0.5\% \leq Mn \leq 2\%$; $traces \leq Si \leq 3\%$; $traces \leq Ni \leq 4.5\%$; $traces \leq Al \leq 3\%$; $traces \leq Cr \leq 1.2\%$; $traces \leq Mo \leq 0.30\%$; $traces \leq V \leq 2\%$; $traces \leq Cu \leq 3.5\%$; and satisfying at least one of the following conditions:

10 * $0.5\% \leq Cu \leq 3.5\%$;

 * $0.5\% \leq V \leq 2\%$;

 * $2 \leq Ni \leq 4.5\%$ and $1\% \leq Al \leq 2\%$;

the remainder being iron and impurities resulting from preparation;

15 • hot deforming the cast steel at least once at a temperature in the range $1100^{\circ}C$ to $1300^{\circ}C$ in order to obtain a blank of the part;

 • controlled cooling of the blank for the part in still air or forced air; and

20 • heating the steel to perform precipitation annealing before or after machining the part from said blank.

25 2. A method according to claim 1, wherein the steel contains 5 ppm to 50 ppm of B.

 3. A method according to claim 1, wherein the steel contains 0.005% to 0.04% of Ti.

30 4. A method according to claim 2, wherein the steel contains 0.005% to 0.04% of Ti, and wherein the Ti content is equal to at least 3.5 times the N content of the steel.

35 5. A method according to claim 1, wherein the steel contains 0.005% to 0.06% of Nb.

6. A method according to claim 1, wherein the steel contains 0.005% to 0.2% of S.

7. A method according to claim 6, wherein the steel contains at least one of the following elements: Ca up to 0.007%; Te up to 0.03%; Se up to 0.05%; Bi up to 0.05%; and Pb up to 0.1%.

8. A method according to claim 1, wherein the C content of the steel lies in the range 0.06% to 0.20%.

9. A method according to claim 8, wherein Mn content of the steel lies in the range 0.5% to 1.5%, and wherein the Cr content lies in the range 0.3% to 1.2%.

10. A method according to claim 8, wherein the Ni content of the steel lies in the range traces to 1%.

11. A method according to claim 8, wherein the Ni content of the steel lies in the range 2% to 4.5%, and wherein the Al content lies in the range 1% to 2%.

12. A method according to claim 1, wherein the precipitation annealing is performed in the range 425°C to 600°C.

13. A method according to claim 12, wherein the steel contains 0.5% to 3.5% of Cu, and wherein the precipitation annealing is performed in the range 425°C to 500°C for 1 h to 10 h.

14. A method according to claim 12, wherein the steel contains 0.5% to 2% of V, and wherein the precipitation annealing is performed in the range 500°C to 600°C for more than 1 h.

15. A method according to claim 12, wherein the steel contains 2% to 4.5% of Ni and 1% to 2% of Al, and wherein the precipitation annealing is performed in the range 500°C to 550°C for more than 1 h.

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16. A method according to claim 1, wherein said hot deformation is rolling.

10 17. A method according to claim 1, wherein said hot deformation is forging.

18. A method according to claim 1, wherein controlled cooling of the blank is performed at a rate less than or equal to 3°C/s in the range 600°C to 300°C.

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19. A steel part, obtained by the method according to claim 1.

20 20. A steel part according to claim 18, the part possessing bainite microstructure, tensile strength R_m of 750 MPa to 1300 MPa, and a yield strength R_e greater than or equal to 500 MPa.